choice of a large ring thus is variable by surgeon. Although the average A2 height in our series (29 mm) corresponds most closely to a 34 Myxo-ETlogix ring, larger than the largest Physio ring (27 mm), we commonly used smaller Myxo-ETlogix rings instead of large Physio rings because of the perceived benefit of the 4-mm P2 displacement with the Myxo-ETlogix ring to reduce the risk of SAM. Whether it is the P2 displacement or the large size of the Myxo-ETlogix ring that accounts for our low incidence of SAM is not yet clear.

Study Limitations

This was a nonrandomized study of the initial use of a new commercially available ring, but not all ring sizes were available during the study period. The inventor of the ring was the surgeon in the vast majority of cases, and we attempted to reduce this bias with direct quantitative measurements and standard echocardiographic reporting. The data in all tables and figures therefore represent unbiased measurements and clinical results. A randomized trial is certainly feasible but would be best performed at another institution, albeit with experienced surgeons.

In summary, a new ring was introduced with a change in our clinical practice. The result was simpler MV repair procedures, rare nonobstructive SAM, and excellent clinical and echocardiographic results. Further confirmation at other centers is pending, and late echocardiographic follow-up is ongoing.

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Discussion

Dr Aidan A. Raney *(Newport Beach, Calif).* I enjoyed this presentation very much. Dr McCarthy is making a major contribution. As he mentioned, the repairability rate of valves in this country is in the

40% to 50% range. However, if the most complex valves with excessive tissue are included, the overall repairability rate is probably going to be significantly lower, maybe in the 30% range. This device is a tremendous advance. Not only does it simplify the procedure but it also reduces the risk of SAM.

When we looked at our series of over 200 patients about $1\frac{1}{2}$ years ago, we also had about a 5% incidence of SAM that required a second pump run and correction.

I have a few questions for you. In your series, are you repairing all the myxomatous valves with the Myxo-ETlogix ring or do you have a sense of certain valve characteristics that would preclude using this device?

Dr McCarthy. Right now, we look at the leaflet and annulus size. In the majority of these patients with myxomatous leaflets, something is elongated. The valves do not always fall into that category of fibroelastic deficiency, so that it may be an elongated anterior leaflet but not a very elongated posterior, or the other way around. I use the Physio ring when the remaining valve is normal: the anterior leaflet, P1 and P3, are normal, and we have resected the abnormal part, which is usually a flail involving P2.

Dr Raney. Do you think that there is less modification of the annulus with this device, that is, without quadrangular resection and a plication of the posterior annulus? Because sizing can be a problem, do you think that transesophageal echocardiography before the repair will provide a good indication of what size of a Myxo-ETlogix ring to use?

Dr McCarthy. We are collecting a big database on our MV repairs, and we are also going to correlate it with what echocardiography measures. So far, it looks very good. When we measure A2 at 29 mm, the echocardiographer measures it at roughly the same. We hope to get to a point where the echocardiographer can identify the height of the anterior and posterior leaflets and we can then prescribe the right sized ring.

Dr Raney. We have used this ring now in 8 cases, and I have been very impressed with the efficacy and the efficiency of the ring.

Dr Michael Mack *(Dallas, Tex).* Dr McCarthy, do you have any experience using this ring with artificial chords and does that make sense?

Dr McCarthy. I think it makes sense. I do not really use artificial chords very much. I am still pretty classic and I do chordal transfer. However, some surgeons are using artificial chords with the ring. If artificial chords are used on the posterior leaflet where there is an elongated P2 segment that is not being replaced, I think this would make sense, because otherwise, as you could see from the AP diameter, a 40-mm Physio ring is not nearly big enough for that group of patients.

Dr Mack. Is this ring generally available?

Dr McCarthy. It is in the United States now.

Dr Jen-Ping Chang *(Kaohsiung, Taiwan).* We all know that Professor Carpentier repairs the Barlow valves by banding the septal portion of the classic ring anteriorly, and we know your ring is just like bending the posterior portion of the ring posteriorly. What is the difference between the anterior displacement and the posterior displacement of this ring?

Dr McCarthy. The anterior displacement that Dr Carpentier does periodically is variable: he could bend it just a little bit or he could bend it quite a bit. It seemed to us most of the reduction should be more posterior rather than anterior, and so when we designed the ring, that is where we put it. Also, remember on the classic ring when Dr. Carpentier bends it that way, that is the only place he can bend it because that is where the break is in the ring. So it is the only part that is practical.